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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,008	04/14/2004	Shuo-Hsiu Hu	AUO-102	5926
7590 David I. Roche BAKER & McKENZIE 130 E. Randolph Drive Chicago, IL 60601			EXAMINER SHENG, TOM V	
			ART UNIT 2629	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/824,008	Applicant(s) HU ET AL.	
	Examiner Tom V. Sheng	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6-10,12,14-16,18 and 20-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-10,12,14-16,18 and 20-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4, 12 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for the claims, it is unclear to one of ordinary skill in the art in how to make use of the crenelated profile of the scan line since no relation is described between the profile and the adjacent light-emitting devices. This is a critical aspect of the invention.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 4, 6-8, 15, 16, 18 and 20-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Asano et al. (US 6,768,482 B2), hereinafter Asano.

As for claims 1 and 7, Asano teaches an electroluminescent display (fig. 3) comprising:

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at least one scan line (scanning lines 12_i to 12_{i+2} ; column 4, lines 23-34);

a plurality of data lines (data lines 13_i to 13_{i+2} ; column 4, lines 23-34);

a plurality of light-emitting devices (sub-pixels 11) arranged in a row along the at least one scan line, wherein each light-emitting device has a light emission region (organic EL device EL_{ij}) that forms a display area (column 4, lines 35-41); and

a plurality of electrical addressing devices respectively coupling each of the light-emitting devices in the row to one data line and the at least one scan line (each EL device EL_{ij} in line 12_i is controlled by a selection transistor TR_{iia} and a driving transistor TR_{iib} connecting to a respective gate line and data line; column 4, lines 42-59);

wherein the entire display areas of at least two light-emitting devices adjacent to each other in the row are arranged at alternated sides of the at least one scan line (Asano teaches that the R, G, B sub-pixels (EL devices) could be in a delta arrangement (fig. 6A) while corresponding sub-pixel circuits are in a stripe arrangement (fig. 6B). The resulting sub-pixel arrangement (fig. 6C) shows contacts 39 (fig. 13; fig. 13 corresponds to fig. 6C). Moreover, Asano teaches that the positions of the contacts 39 between two adjacent sub-pixels differ between each other in a direction of a scanning line and that there is an inter-row boundary between the two-subpixels (column 8, lines 29-45). Inherently the scanning line runs along the inter-row boundary between the contact electrodes. Consequently, the adjacent EL devices are arranged at alternated sides of the scan line. For example, between top left R sub-pixel and top left G sub-pixel.). Note if the scanning line were moved to say the pixel circuit boundary, then it would only increase the path resistance to respective contacts.

As for claims 2 and 16, the delta arrangement of the RGB EL devices shows opposite offsets between adjacent EL devices (fig. 6C).

As for claims 4 and 18, Asano teaches a modification (fig. 14) where a scan line is crenelated and with increased light emitting regions located alternately at two sides of the scan line (column 8, line 56 through column 9, line 34).

As for claim 6, Asano teaches that each device EL_{ij} is an organic EL device, which is also known as an organic light-emitting diode. For evidence, see column 1, lines 34-36 of Lee (US 6,741,037 B2).

As for claims 8 and 24, each selection transistor TR_{ija} is connected between a corresponding gate line via its gate and a data line via its drain, and a driving transistor TR_{iib} is connected to corresponding selection transistor TR_{ija} via its gate. When active, current flows from power supply line 14 through the device EL_{ij} to ground 15 (column 4, lines 50-60). It is inherent that addressing comes from gate lines and image signals come from data lines.

Claim 15 is rejected per analysis of claim 1 and further with each pixel having respective R, G and B sub-pixels.

As for claim 20, the cathode of each device EL_{ij} of a sub-pixel corresponds to claimed display electrode.

As for claim 21, each selection transistor TR_{ija} has its gate terminal connected to a scan line 12_i, its drain terminal connected to a data line 13_i, and its source terminal connected to a display electrode (cathode of EL_{ij} via driving transistor TR_{iib}).

As for claim 22, each sub-pixel does have a corresponding device EL_{ij} (light-emitting device) coupled to a selection transistor TR_{ija} and a driving transistor TR_{iib} (electrical addressing device).

As for claim 23, the selection transistor TR_{ija} is a switch thin film transistor and the driving transistor TR_{iib} is a driver thin film transistor.

As for claim 25, the R, G and B sub-pixels of each pixel are arranged in a delta configuration as shown in fig. 6A.

5. Claims 9, 10, 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Shin et al. (US 6,429,842), hereinafter Shin.

As for claim 9, Shin teaches a liquid crystal display (fig. 6) comprising:
at least one scan line (gate lines $G1-G_m$; column 3, lines 8-10);
a plurality of data lines (data lines $D1-D_n$; column 3, lines 3-8);
a plurality of display electrodes (pixel electrodes P) arranged in a row along the scan line (see $P11$, $P22$, $P13$, etc. along scan line $G1$; column 3, lines 11-13); and
a plurality of electrical addressing devices (TFTs T) respectively coupling each display electrode in the row to one data line and at least one scan line (for scan line $G1$, $T11$ is connected $P11$, $T22$ is connected to $P22$, and etc.);

wherein at least two display electrodes adjacent to each other in the row are entirely arranged at alternated sides of the at least one scan line (pixel electrode $P11$ is disposed on the upside of gate line $G1$ while pixel electrode $P22$ is disposed on the downside of gate line $G1$; column 3, lines 13-22).

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As for claim 10, because P11 is on the upside and P22 is on the downside, they are oppositely offset from each other relative to the row direction.

As for claim 14, each TFT T has its gate terminal connected to a gate line, its drain terminal connected to a data line, and its source terminal connected to a pixel electrode.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shin as applied to claim 9 above, and further in view of Asano.

As for claim 12, Shin's gate line (e.g. G1) is straight and thus does not teach a scan line with a crenelated profile. On the other hand, Asano teaches a modification (fig. 14) where a scan line is crenelated and with increased light emitting regions located alternately at two sides of the scan line (column 8, line 56 through column 9, line 34). One of ordinary skill in the art would recognize that using a crenelated scan line profile would advantageously allow Shin to use larger pixel electrodes for a brighter display.

Therefore, it would have been obvious to incorporate a crenelated gate line naturally with color sub-pixels distributed alternately along both sides of the crenelated gate line because of the advantage of having a larger sub-pixel size for display.

Response to Arguments

8. Applicant's arguments with respect to claims 1, 2, 4, 6-10, 12, 14-16, 18 and 20-25 have been considered but are moot in view of the new ground(s) of rejection (see the further clarified rejection based on Asano and the new rejection based on Shin). Nevertheless, the examiner would like to address applicant's argument that Asano does not teach that light-emitting regions adjacent in one row are arranged at alternated sides of the scan line. The fact that the contacts for the delta arranged sub-pixels be arranged at alternated sides along the inter-row boundary between contact electrodes (i.e. between sub-pixels of each pixel) in the scan direction inherently indicated that the scan line is at the same inter-row boundary with the light-emitting regions at alternated sides.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V. Sheng whose telephone number is (571) 272-7684. The examiner can normally be reached on 9:00am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tom Sheng

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

